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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,483	01/05/2001	Deyang Song	5416P001	5096

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EXAMINER	
LAMBRECHT, CHRISTOPHER M	
ART UNIT	**PAPER NUMBER**
2623	

DATE MAILED: 04/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/755,483	SONG ET AL.	
	Examiner	Art Unit	
	Chris Lambrecht	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,21,28 and 36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,21,28 and 36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed February 2nd, 2006 have been fully considered but they are not persuasive. Specifically, claims 1 and 28 have been amended to include a method and server to "determine a minimum required bandwidth b_{tot} to transmit digital content comprising n segments, based on $b_{tot} = B\sum_{i=1}^{n}\frac{1}{d+i-1}$, wherein B is a data rate of the digital content and d is a delay time . . ." and for "determining a schedule for transmission times of various segments of the digital content . . . so as not to exceed the determined minimum bandwidth." Applicant asserts that none of the cited references disclose or suggest these features. Applicant's Remarks/Arguments at 5.

U.S. Patent No. 6,519,693 ("DeBey '693", of record), however, discloses determining a minimum required bandwidth, as claimed. DeBey '693 calculates a total data transmission requirement for a particular video by computing the sum of the reciprocals of the segment numbers. The total data is equivalent to the bandwidth required, expressed in terms of video playback time ("VPT"). DeBey '693, Eq. (3), Col. 10, Lines 29–50. Thus, DeBey '693 teaches determining a minimum transmission bandwidth required to transmit digital content comprising a number of segments.

The delay factor d recited in Applicant's claims 1 and 28 is implicit in equation (3) of DeBey '693. That is, the claimed delay factor d is defined as the ratio of the specified delay time t_d to the playback time s of a particular video segment. Applicant's Specification at 17:11–16. In DeBey '693, this ratio corresponds to the ratio of maximum response time ("MRT") to VPT. For simplicity in explanation, the reference assumes MRT=VPT. DeBey '693, Col. 8, Lines 7–34. Thus, the delay factor d in the exemplary embodiment of DeBey '693 is equal to one.

Therefore, the summation recited in Applicant's claims 1 and 28 is equivalent to the summation of DeBey '693's equation (3): where $d = 1$ and $i = 1 \ldots n$, Applicant's claimed bandwidth formula is

equivalent to DeBey '693's equation (3). Further, DeBey '693 discloses determining a schedule for transmission times of the various segments so as not to exceed the determined minimum bandwidth. DeBey '693, Col. 15, Line 46 – Col. 16, Line 64.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 21, and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,701,582 to DeBey ("DeBey '582").

Regarding claim 1, DeBey '582 discloses a method comprising:

determining a minimum required bandwidth b_{tot} to transmit digital content comprising n segments, based on

$$b_{tot} = B\sum_{i=1}^{n}\frac{1}{d+i-1},$$

wherein B is a data rate of the digital content and d is a delay time (col. 15, line 36 – col. 16, line 52; figs. 8–10); and

determining a schedule for transmission times of various segments from the plurality of segments of the digital content (col. 16, lines 8–26; fig. 9) across multiple channels (col. 7, lines 40–62) so as to permit any number of content consumers to begin playback of a request for such playback (col. 7, lines 62–67), and so as not to exceed the minimum required bandwidth (col. 16, lines 44–52).

As to claim 2, DeBey '582 discloses the method of claim 1 wherein various segments of digital content together comprise a movie (col. 15, lines 44–55).

As to claim 21, DeBey '582 discloses the method of claim 1 further comprising receiving the segments following transmission thereof over a broadcast network, storing the segments in temporary storage, and playing back the segments (col. 5, lines 23–34).

As to claim 36, DeBey '582 discloses the method of claim 2, wherein determining the schedule for transmission times of various segments of the movie comprises inserting each segment from various segments into a queue (fig. 9) according to $k = \left\lfloor \frac{T_P}{t_i + t_d} \right\rfloor$, wherein k is the number of times a segment from the various segments is broadcast in one period T_P (e.g., intervals 1–16 in fig. 9), i is the segment index (segments 1 . . 8), t_i is the playback time (interval number) for the segment and t_d is a selected maximum wait-time by a receiver (MRT = 1 interval; col. 8, lines 22–24; col. 16, lines 9–26).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over DeBey '582 in view of Willard (of record).

Regarding claim 28, DeBey '582 discloses a server as applied to claim 1. However, DeBey '582 fails to disclose the schedule is determined according to an earliest-deadline-first (EDF) process, wherein in the EDF process a next transmission time for one of the various segments of digital content is determined by first finding an earliest deadline amongst a list of current deadlines for each of the various segments and selecting this segment for transmission.

In an analogous art, Willard discloses the schedule is determined according to an earliest-deadline-first (EDF) process (earliest maximum beginning time, col. 3, l. 64 – col. 4, l. 9, where a maximum beginning time constitutes a deadline), wherein in the EDF process a next transmission time for one of the various segments of digital content is determined by first finding an earliest deadline (earliest maximum beginning time) amongst a list of current deadlines for each of the various segments and selecting this segment for transmission (col. 4, l. 60 – col. 5, l. 12), thereby reducing the difficulty associated with scheduling large numbers of segments (modules) transmitted by the system (col. 2, ll. 28–35 and col. 1, l. 57 – col. 2, l. 2).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the server of DeBey '582 to include determining the schedule according to an earliest-deadline-first (EDF) process, as taught by Willard, for the benefit of reducing the number of segments that must be transmitted by the system in a method for determining a schedule for transmission of digital content.

Conclusion

6. The following are suggested formats for either a Certificate of Mailing or Certificate of Transmission under 37 CFR 1.8(a). The certification may be included with all correspondence concerning this application or proceeding to establish a date of mailing or transmission under 37 CFR 1.8(a). Proper use of this procedure will result in such communication being considered as timely if the established date is within the required period for reply. The Certificate should be signed by the individual actually depositing or transmitting the correspondence or by an individual who, upon information and belief, expects the correspondence to be mailed or transmitted in the normal course of business by another no later than the date indicated.

Certificate of Mailing

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to:

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Please refer to 37 CFR 1.6(d) and 1.8(a)(2) for filing limitations concerning facsimile transmissions and mailing, respectively.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chris Lambrecht whose telephone number is (571) 272-7297. The examiner can normally be reached on M-F, 9:30 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller can be reached on M-F at (571) 272-7353. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chris Lambrecht
Examiner
Art Unit 2623

CL

JOHN MILLER
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